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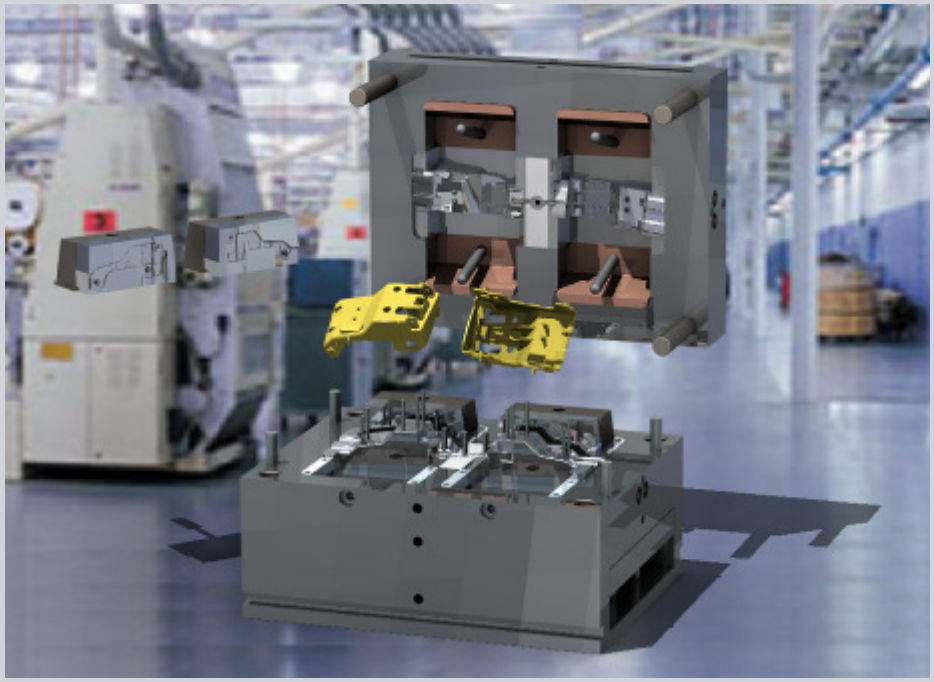
NX 6 - Mold Design through Manufacture Process Optimization

Aaron Frankel
Senior Marketing Manager



Siemens PLM Software

Key Business Issues
- for mold and die tool manufacture

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How to:

- Compete on price
- Shorten delivery times
- Win on complex jobs
- Meet quality demands

Global competition

Products are more complex, no margin in simple jobs

Today's consumers expect high quality

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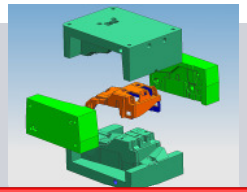
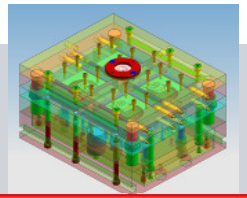
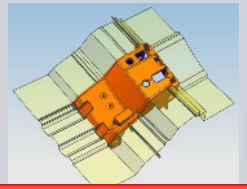
NX Mold Design Process



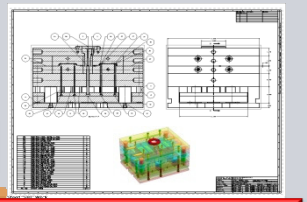
Core / Cavity



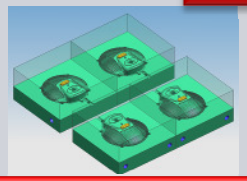
Mold Base



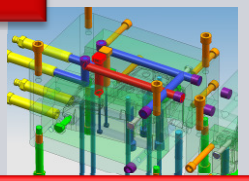
Parting



Detailing

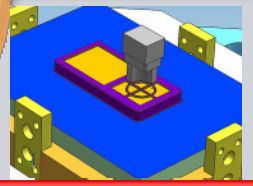


Layout

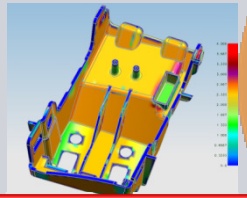


Design Validation

Most complete and fastest process from design to manufacture through <u>intelligent automation</u> & <u>process integration</u>

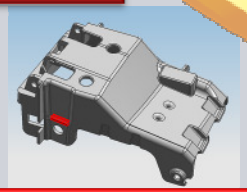


Electrode Design

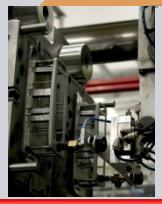


Part Analysis / Region Definition

Hole Making & Machining



Import to NX (STEP,IGES,...



Production

Supply Chain

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Product Analysis

Engineering Process Management

Design Change Propagation and Control

- **Product Analysis**
  - Data Quality / Repair
  - Property Analysis
  - Moldability Analysis
- **Core / Cavity**
  - Initialize Project
  - Mold CSYS & Workpiece
  - Layout
  - Parting
  - Slides / Lifters
- **Mold Structure**
  - Mold Base
  - Ejector Pins
  - Cooling
  - Gates / Runners
  - Standard Parts
- **Validation**
- **Detailing**
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

"UGS's NX is one of the most established and reliable 3D CAD/CAM solutions available today. It helps us make changes faster and reduce errors."
Shen Zhi Gang, Assistant Engineering Manager, Omni Mold (Singapore)

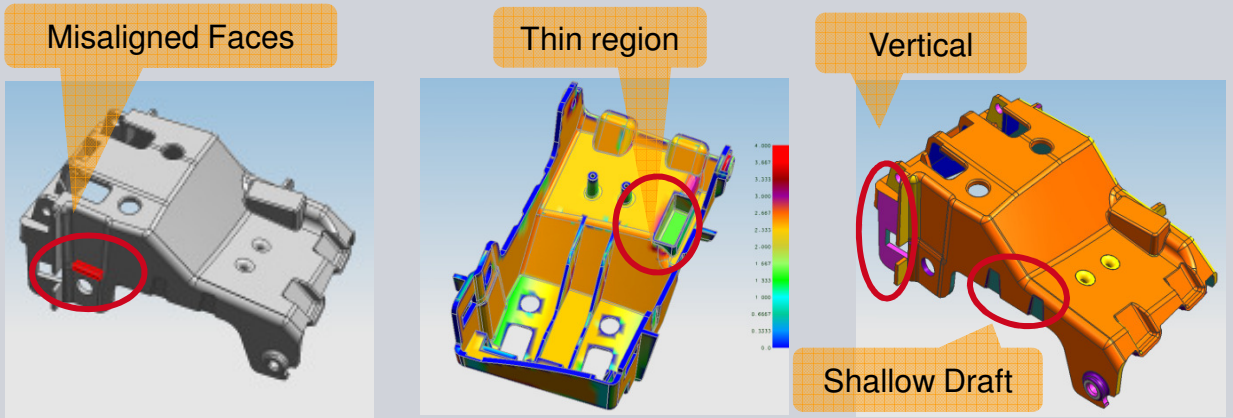
Early Supplier Involvement

New with NX 6

Receive customer data → Product analysis → Design review with customer → Tool design

Product analysis → Repair / re-master data → Design review with customer

Product Analysis



Data Quality | **Part Properties** | **Moldability**

Product Analysis - Early Supplier Involvement

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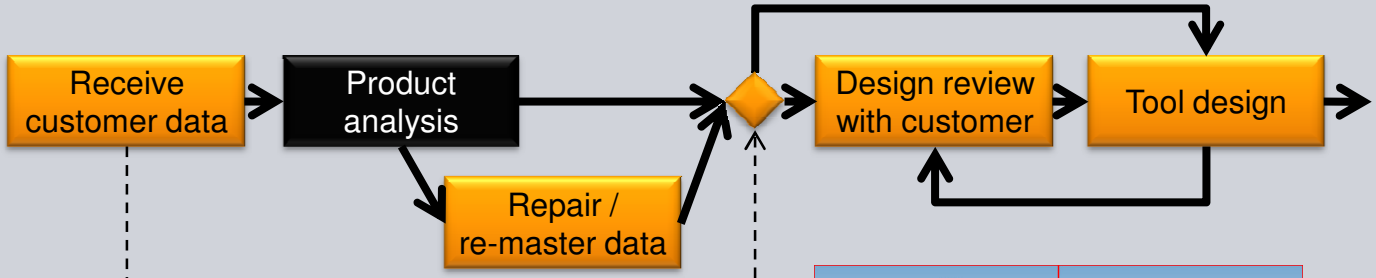
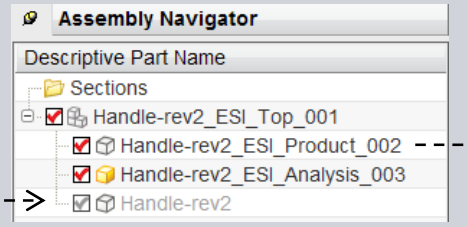
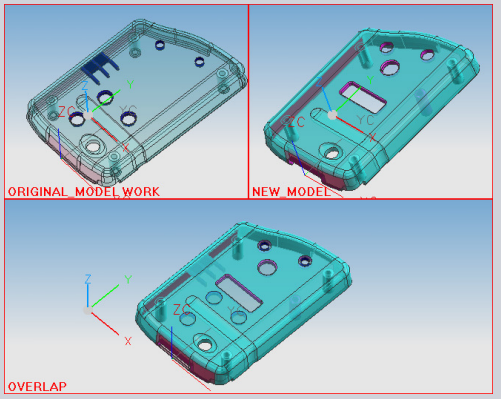
The Early Supplier Involvement (ESI) project template helps to facilitate communication and responsiveness to customer design changes.







Swap & Map Customer Data

OPTIMIZATION TIP: Use the ESI template as the input to the mold project and leverage the benefits of associative design changes.

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Data Quality / Repair

Engineering Process Management

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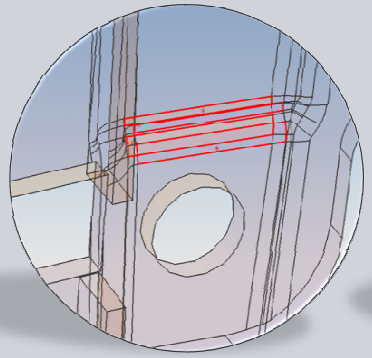
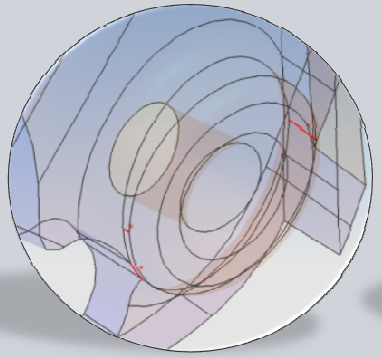
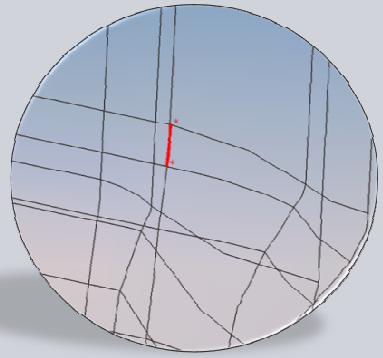
Clean data is a prerequisite for a successful mold design project.
Designers can use NX to heal geometry in a few simple steps.



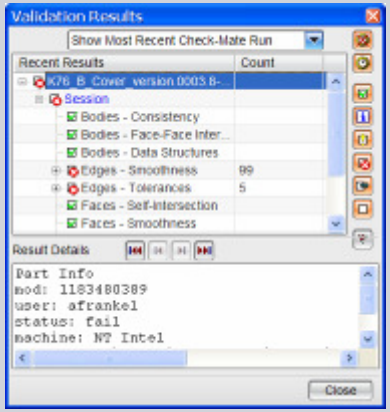
Misaligned Objects



Tolerance



Tiny Objects



Reporting

OPTIMIZATION TIP: Analyze geometry to identify geometric issues, repair the model using modeling capabilities / export and heal geometry

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Property Analysis

Engineering Process Management

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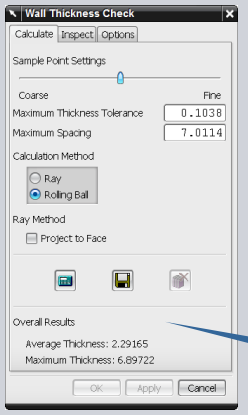
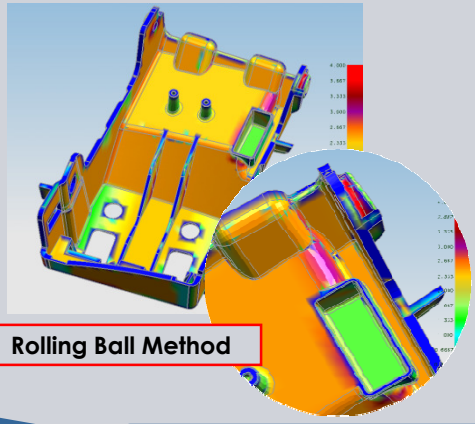
"We reduced the time to analyze wall thicknesses of complicated parts from a range of 3 to 10 days to less than 1 day, while also improving accuracy for identifying potential design issues."

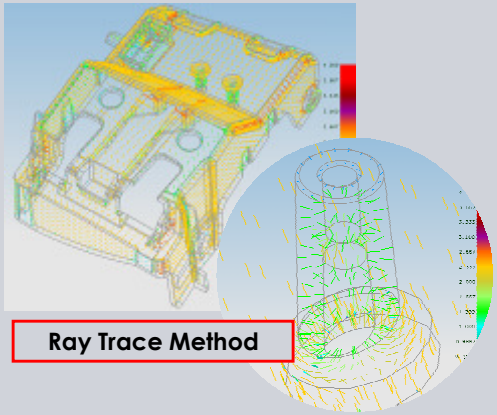
Ben Yadao, Engineer, International Truck and Engine Corporation (United States)

Wall Thickness



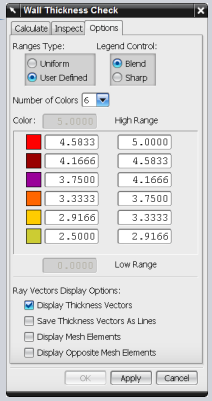


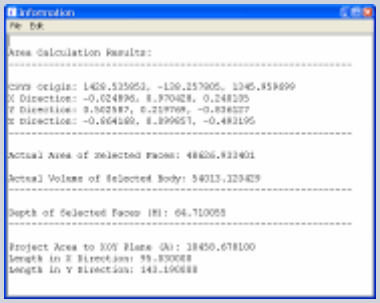
Rolling Ball Method



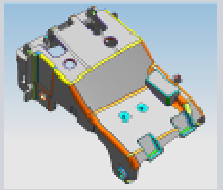
Ray Trace Method

Enhanced in NX 6





Volume / Surface Area / Projected Area



Radii Analysis

Molded Part Validation

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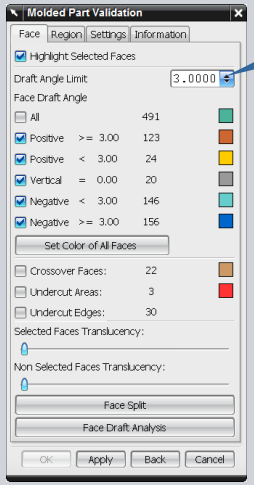
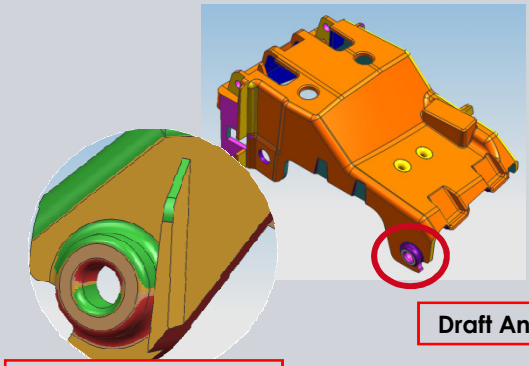
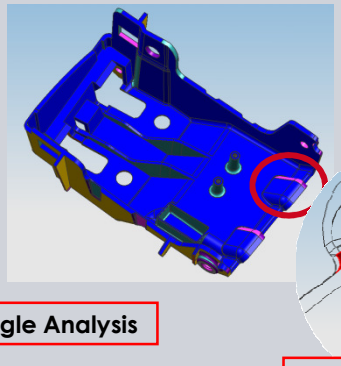
"NX Mold Design's parting line capability contributes greatly to our productivity."
Fernando Ena, Mold Designer, Plasticos Castella, S.A. (Spain)



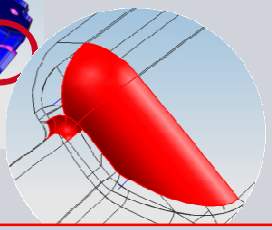
Enhanced in NX 6



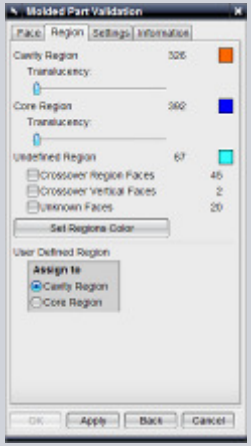
Face Angle Analysis

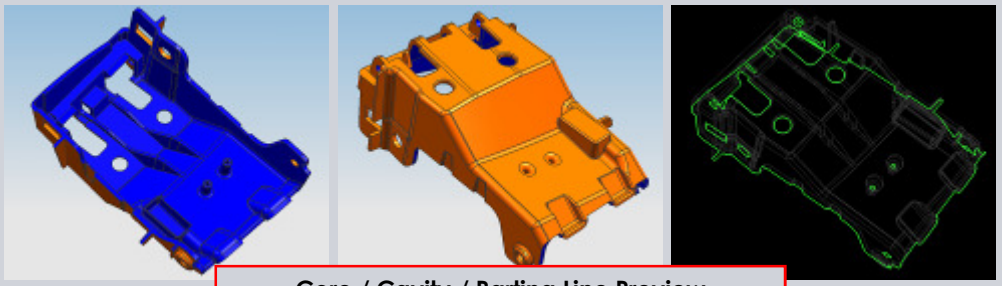


Draft Angle Analysis



Undercut Identification





Core / Cavity / Parting Line Preview

OPTIMIZATION TIP: Leverage Molded Part Validation to assess parts for manufacturability upfront in the design process.

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Core & Cavity Design

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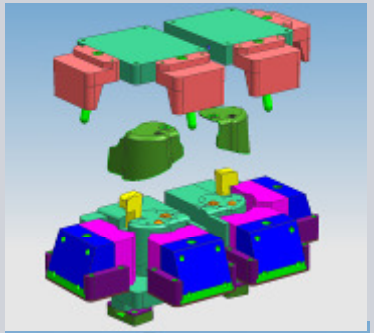
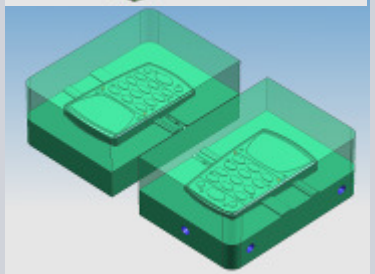
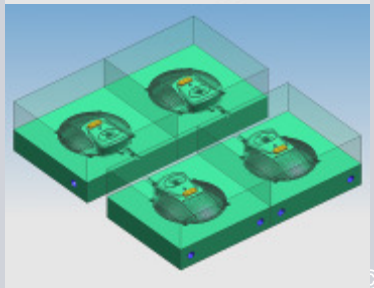
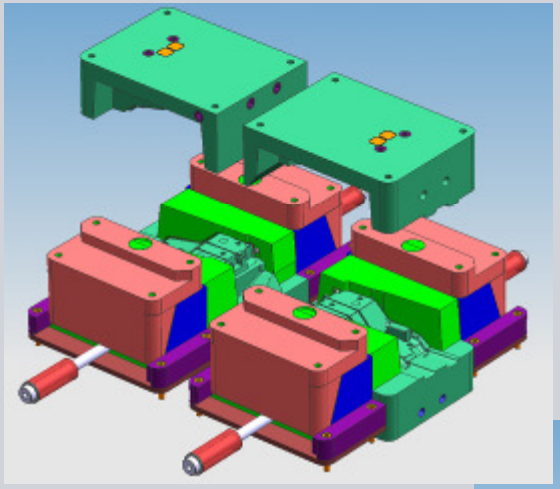
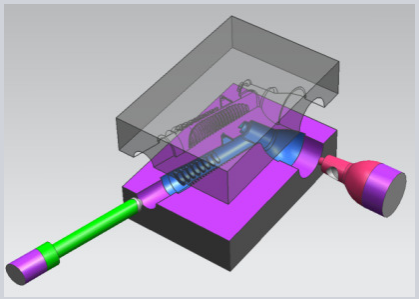
"NX Mold Design has automated so much of the mold design process, walking you through a series of discrete steps. For an inexperienced designer, it's like having someone looking over your shoulder who tells you the next thing you need to do."
David Quinn, Founder, Millennium Mold Design, Inc. (United States)

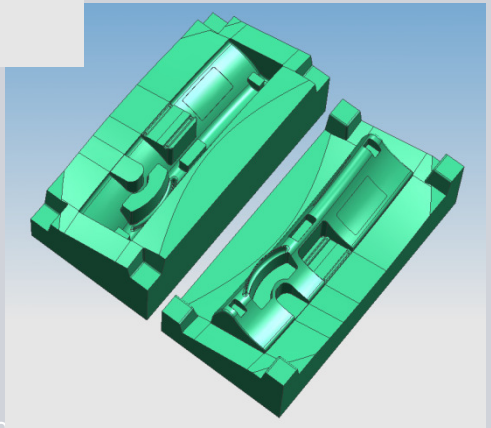












Automotive
Medical
High Tech Electronics
Consumer Products
Machinery
Aerospace
…
…

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Initialize Project

Engineering Process Management

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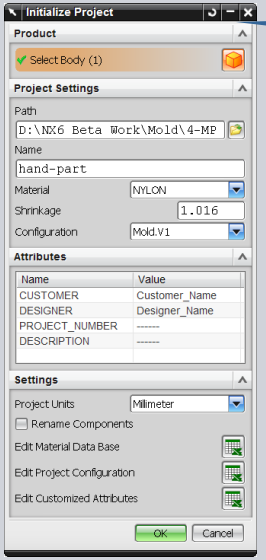
"Project Template Configurations can help to standardize and reuse mold designs faster and more smoothly than before; it is a very useful addition to the mold design process."

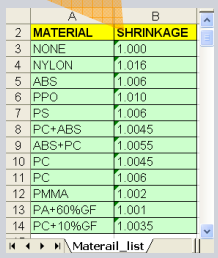
Bryan Lewis, Mold Designer, Minco Tool and Mold, Inc. (United States)



Project Initialization

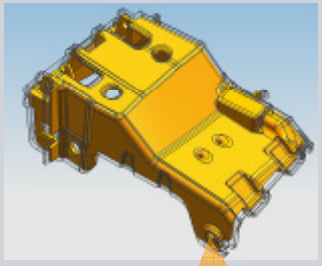
Enhanced in NX 6

Configurable Spreadsheet



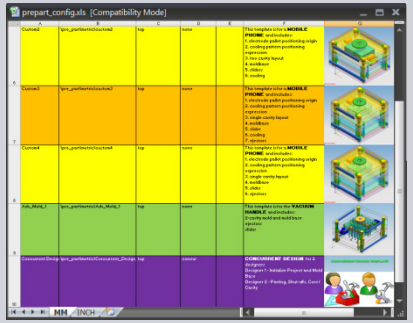
	A	B
2	MATERIAL	SHRINKAGE
3	NONE	1.000
4	NYLON	1.016
5	ABS	1.006
6	PPO	1.010
7	PS	1.006
8	PC+ABS	1.0045
9	ABS+PC	1.0055
10	PC	1.0045
11	PC	1.006
12	PMMA	1.002
13	PA+60%GF	1.001
14	PC+10%GF	1.0035

Materail_list

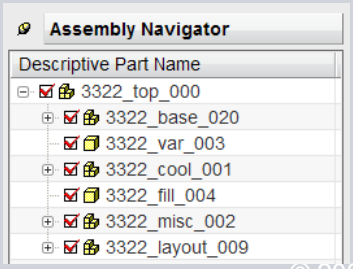


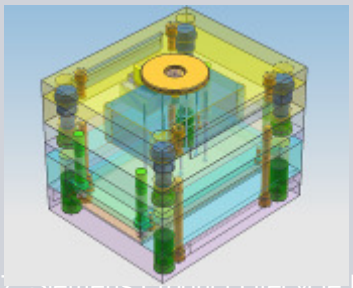
Shrinkage

Uniform, non-uniform shrinkage



Project Templates





Data Organization & Relationship Management

OPTIMIZATION TIP: Configure the shrinkage spreadsheet and mold project structure to streamline design processes.

Siemens PLM Software

Design Setup

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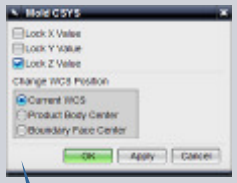
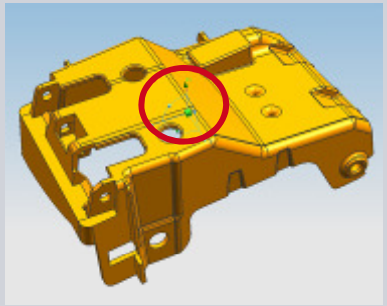
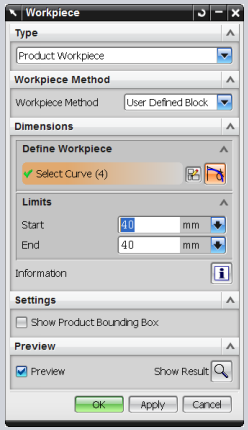
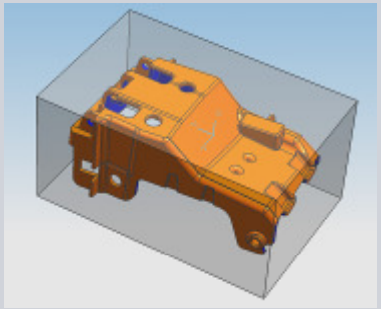
"When we worked in 2D, the designer put a great deal of effort into imaging the mold's third dimension. Now that capability is provided in NX and NX Mold Design."
Joan Doménech, Technical Director, FA MAX (Spain & Hungary)





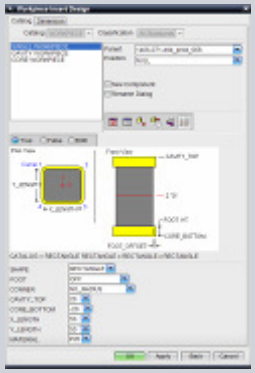
Mold CSYS

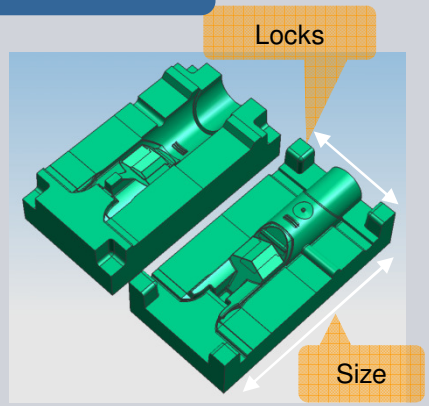


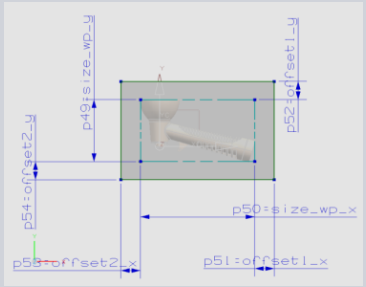


Workpiece

Enhanced in NX 6







OPTIMIZATION TIP: Configure, reuse, and share frequently used workpieces.

Workpiece Library, Configurable Workpieces

SIEMENS

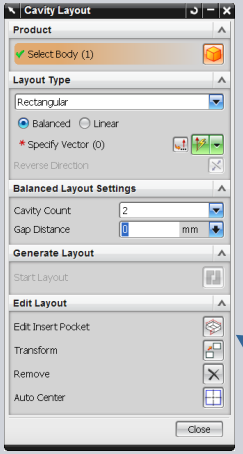
Cavity Layout

Engineering Process Management

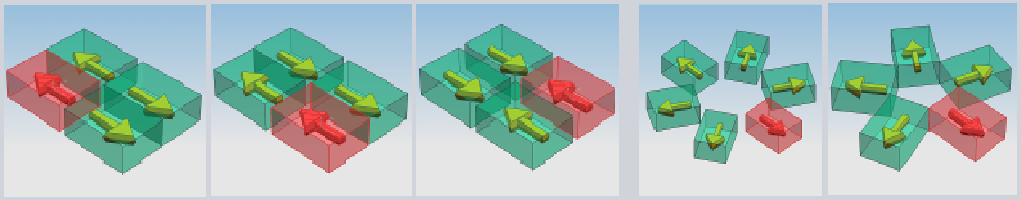
Design Change Propagation and Control

- **Product Analysis**
  - Data Quality / Repair
  - Property Analysis
  - Moldability Analysis
- **Core / Cavity**
  - Initialize Project
  - Mold CSYS & Workpiece
  - Layout
  - Parting
  - Slides / Lifters
- **Mold Structure**
  - Mold Base
  - Ejector Pins
  - Cooling
  - Gates / Runners
  - Standard Parts
- **Validation**
- **Detailing**
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

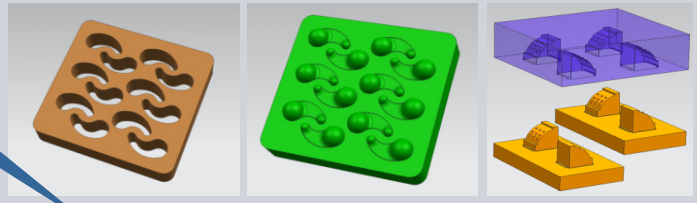
"The more difficult the mold, the more productivity we gain through NX Mold Wizard."
Fernando Ena, Mold Designer, Plasticos Castella, S.A. (Spain)



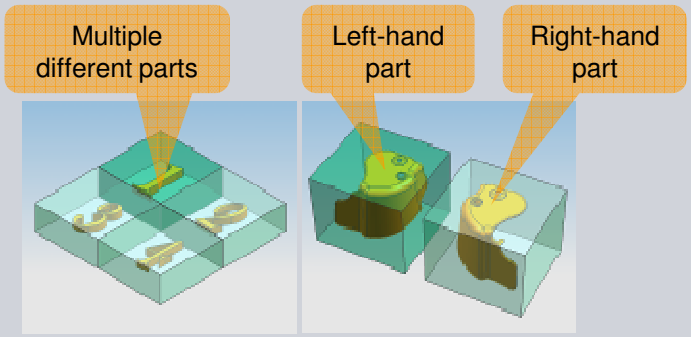
Cavity Layout



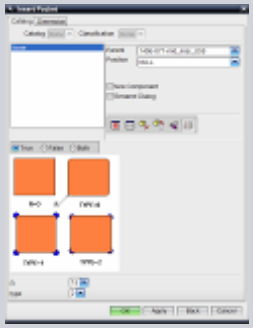
Enhanced in NX 6



Merge Cavities



Family Molds



Workpiece Pocket

Region Definition, Shut-offs, Parting, and Core / Cavity Split

SIEMENS

Engineering Process Management

Design Change Propagation and Control

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  - Parting
  - Slides / Lifters
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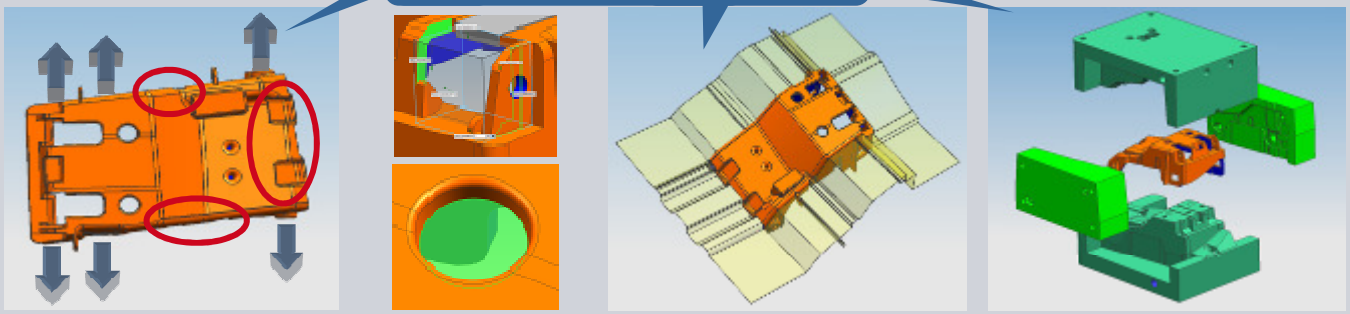
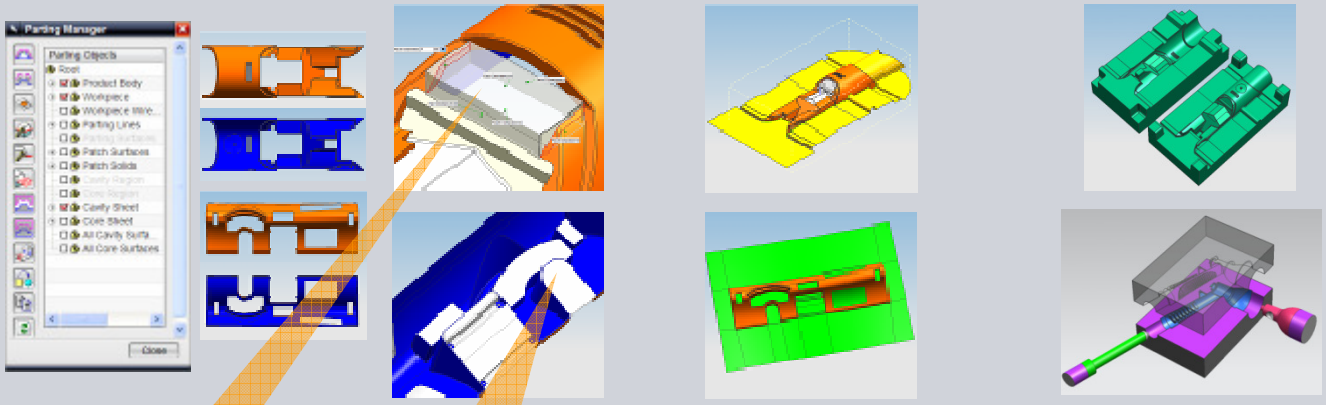
  - Mold Base
  - Ejector Pins
  - Cooling
  - Gates / Runners
  - Standard Parts
- **Validation**
- **Detailing**
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

"The NX 6 parting process has been enhanced to easily support multiple split regions including sliders."
Peter Michel, Design Group Leader, HOFMANN INNOVATION GROUP AG

Enhanced in NX 6



Region Definition → Shut-off Design → Parting Surface Design → Core / Cavity Split



Solid-based

Surface-based

OPTIMIZATION TIP: Automated color mapping keeps colors between product and core/cavity/inserts consistent for automating machining operations.

Slides / Lifters

Engineering Process Management

Design Change Propagation and Control

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  - Moldability Analysis
- **Core / Cavity**
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  - Layout
  - Parting
  - Slides / Lifters
- **Mold Structure**
  - Mold Base
  - Ejector Pins
  - Cooling
  - Gates / Runners
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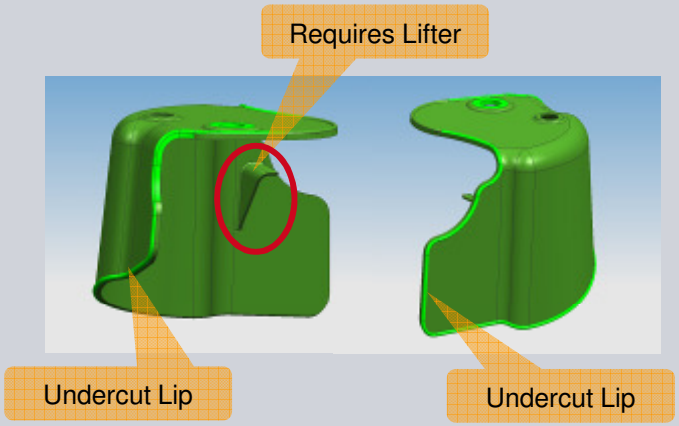
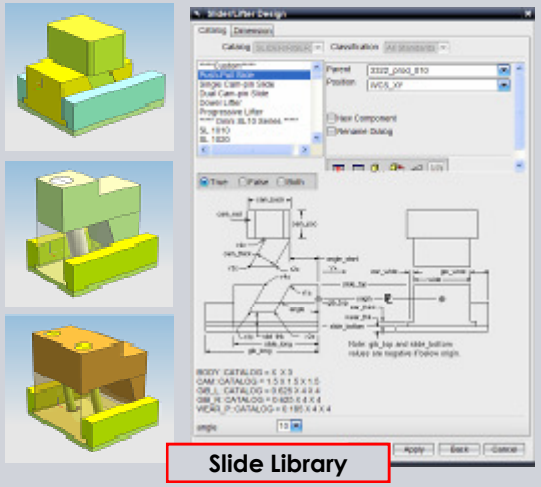
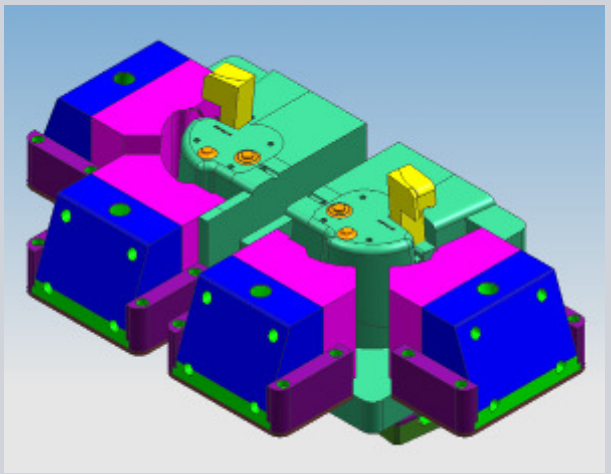
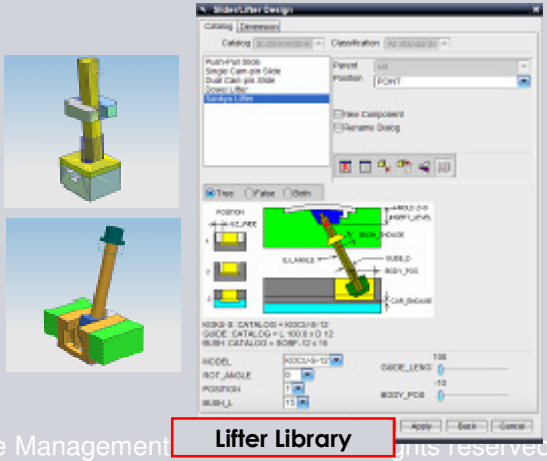
- **Validation**
- **Detailing**
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

Slide and lifter assemblies are accessed from the library, positioned, sized, and modeled to properly shut-off with the part.









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Mold Structure Design

Engineering Process Management

Design Change Propagation and Control

- **Product Analysis**
  - Data Quality / Repair
  - Property Analysis
  - Moldability Analysis
- **Core / Cavity**
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- **Mold Structure**
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  - Ejector Pins
  - Cooling
  - Gates / Runners
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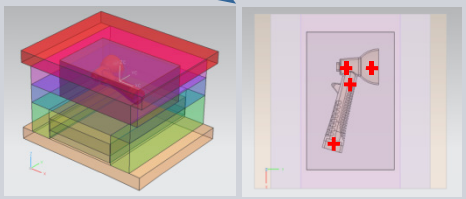
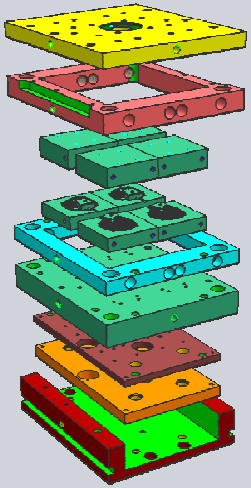
- **Validation**
- **Detailing**
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

"NX has built-in knowledge applications that make things easier for the user. It was a major change, but it was absolutely worthwhile."
Roger Andersson, CEO, Modellteknik AB (Sweden)

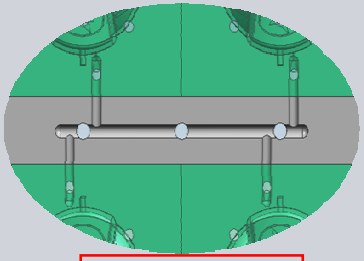
New with NX 6



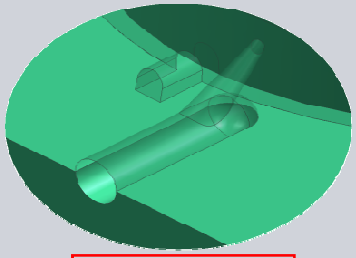
Concept Design



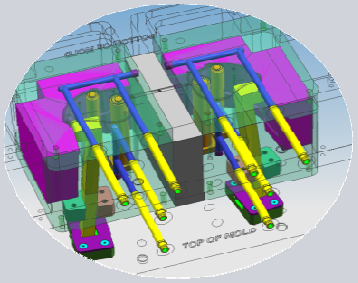
Mold Base



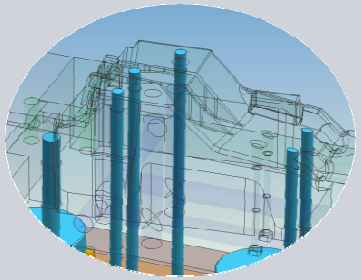
Runner



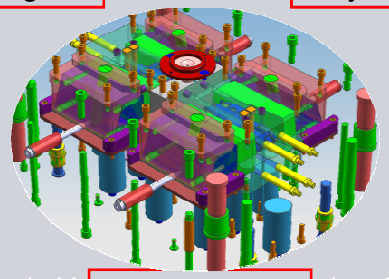
Gate



Cooling



Ejector Pins



Standard Parts

SIEMENS

Concept Design

Engineering Process Management

Design Change Propagation and Control

- **Product Analysis**
  - Data Quality / Repair
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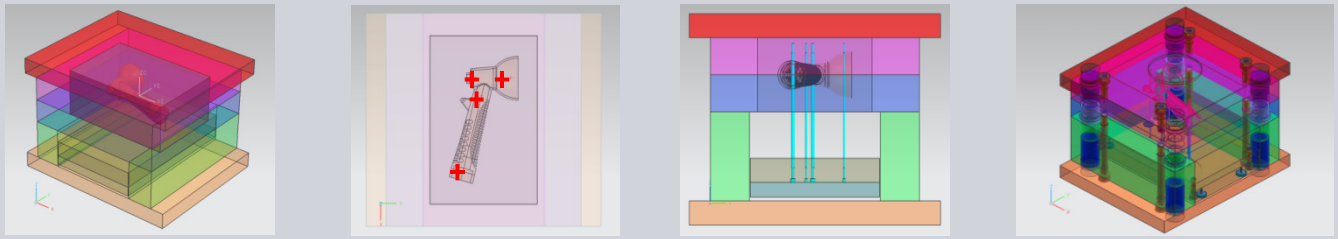
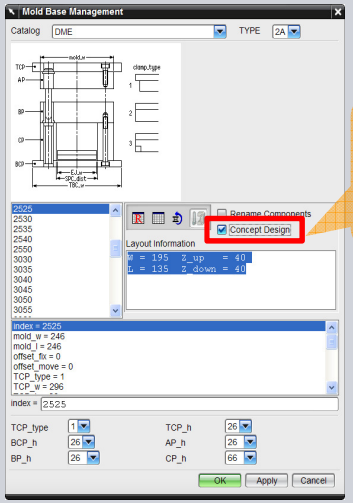
  - Standard Parts
- **Validation**
- **Detailing**
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

"Concept Design is useful for quickly evaluating early design feasibility and for producing a 1st draft of a design."

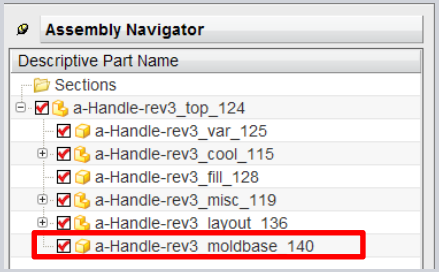
Peter Michel, Design Group Leader, HOFMANN INNOVATION GROUP AG (Germany)



Concept mold base → Concept ejector pins → Fully detailed ejector pins → Detailed mold base & components



Available for DME and HASCO with NX 6



SIEMENS

Mold Bases

Engineering Process Management

Design Change Propagation and Control

- **Product Analysis**
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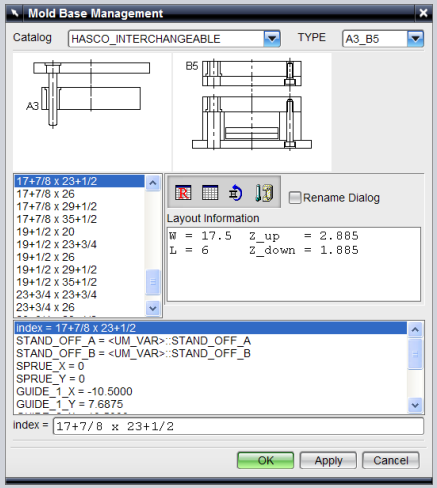
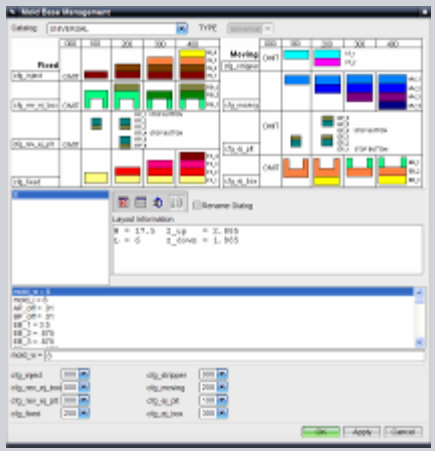
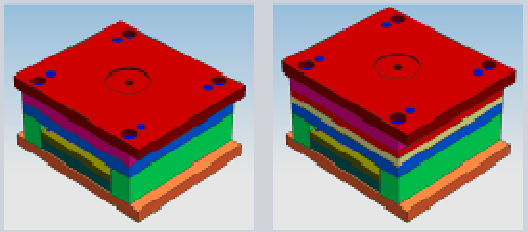
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

"NX Mold Design has increased our productivity 100%, allowing us to create mold designs twice as fast as before."

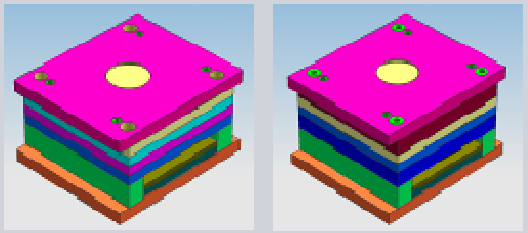
Neal Eli, President, Empire Precision Plastics (United States)



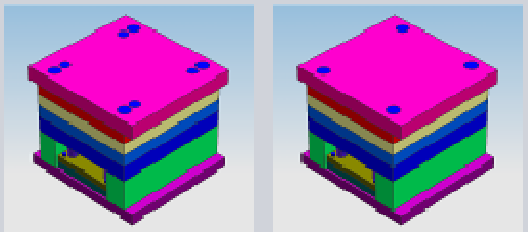




DME



HASCO



LKM

DME
FUTABA
HASCO
LKM
MEUSBURGER
RABOURDIN
STRACK

UNIVERSAL

...add additional...
...configure...

SIEMENS

Ejector Pins

Engineering Process Management

Design Change Propagation and Control

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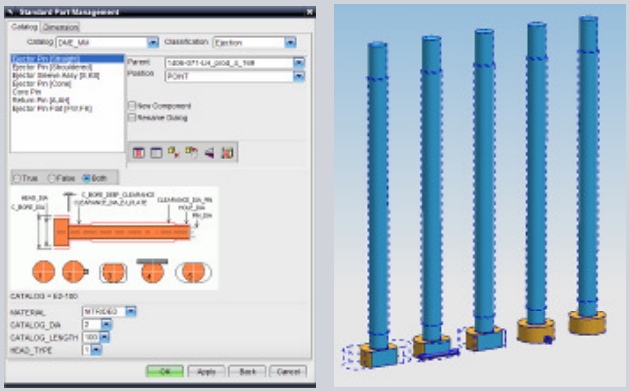
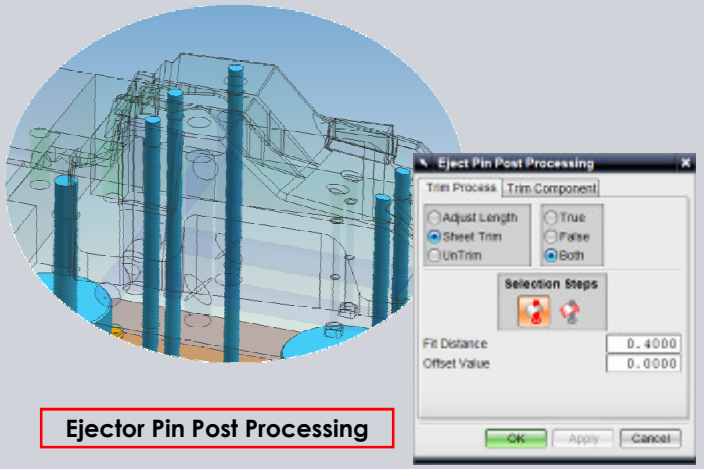
  - Standard Parts
- **Validation**
- **Detailing**
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

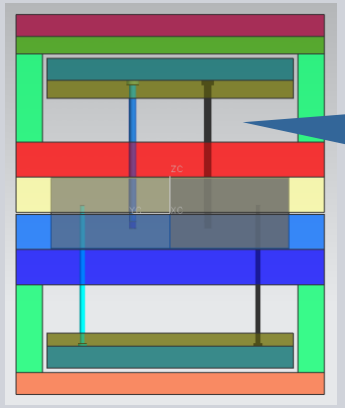
Ejector pins are accessed from the library, positioned, and then post processed for proper sizing/trimming, fit distance and offset definition.



Ejector Pins

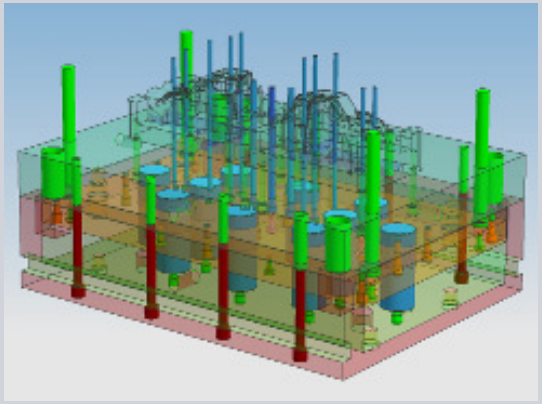


Ejector Pin Post Processing



New in NX 6

Reverse side ejector pins



Siemens PLM Software

Cooling

SIEMENS

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  - BOM
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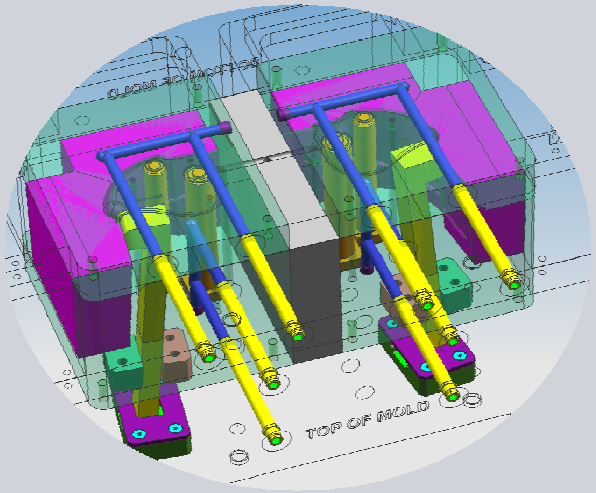
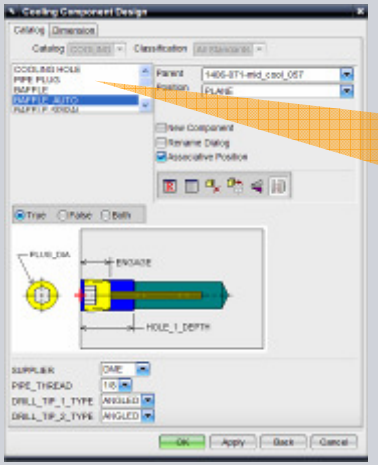
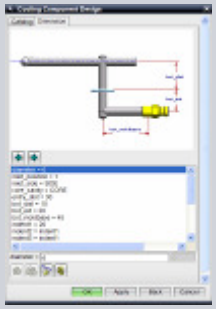
  - Electrodes
  - CAM
  - Shop Floor

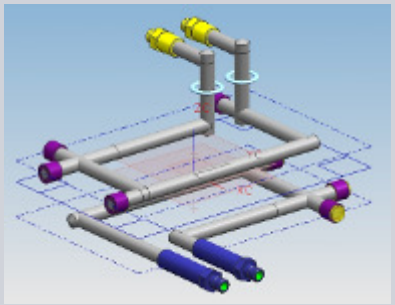
Cooling channels are positioned, sized, and fit with components via a streamlined user interface. Cooling holes are preconfigured with attributes for downstream CAM automation.





Hole, Pipe Plug, Baffle, Spiral Baffle, Connector Plug, Extension Plug, Diverter, O-ring, Cooling Pattern, …





Cooling Pattern

OPTIMIZATION TIP: Configure intelligent cooling patterns that automatically size to inserts.

SIEMENS

Gates / Runners

Engineering Process Management

Design Change Propagation and Control

- Product Analysis
  - Data Quality / Repair
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  - Slides / Lifters
- Mold Structure
  - Mold Base
  - Ejector Pins
  - Cooling
  - Gates / Runners
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- Detailing
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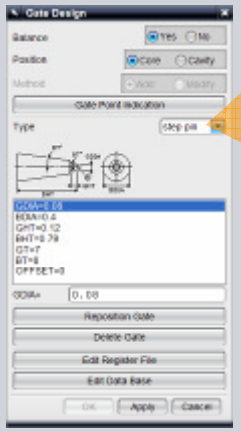
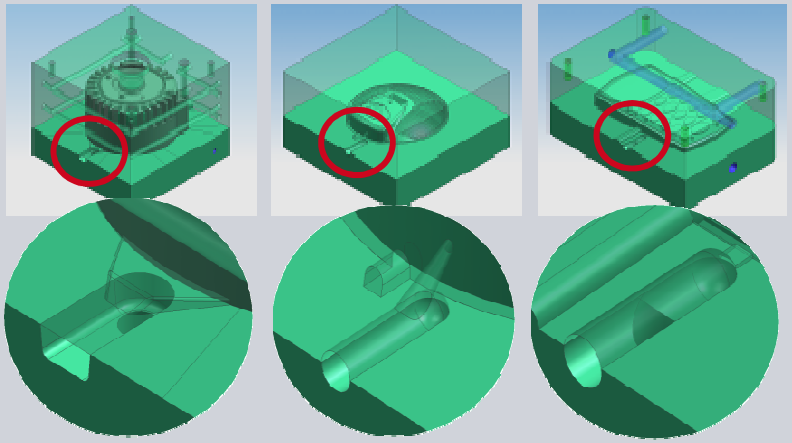
  - BOM
  - Drawings
- Manufacturing
  - Electrodes
  - CAM
  - Shop Floor

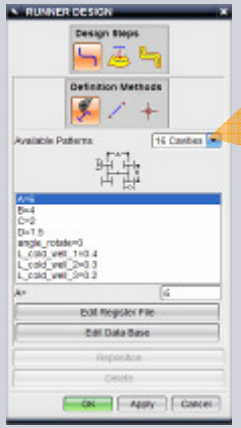
"NX Mold Wizard proved to be the ideal solution. …it is absolutely necessary to have the appropriate tools if you hope to shorten lead times while maintaining quality."
D. Miquel Fiestas, Director, Talleres Fiestas (Spain)



Fan
Film
Pin
Pin Point
Rectangle
Step Pin
Submarine
Tunnel
…

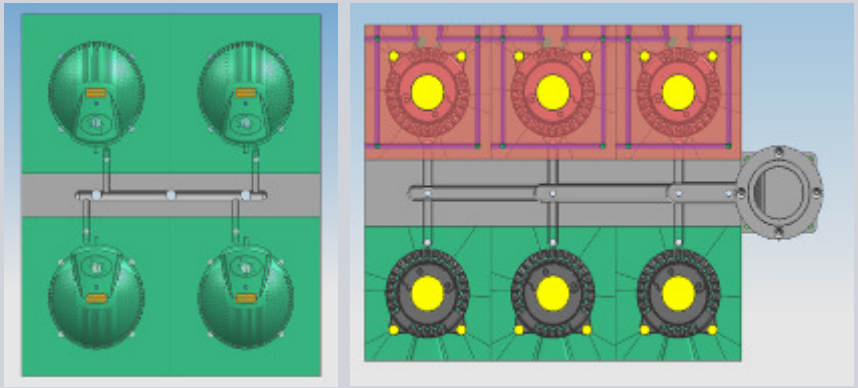
Gate Design





2-Cavity
4-Cavity
8-Cavity
16-Cavity
Circular
S-Shaped
…

Runner Design



SIEMENS

Standard Parts

Engineering Process Management

Design Change Propagation and Control

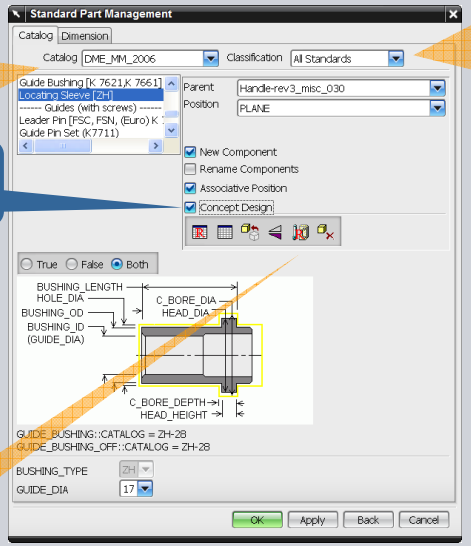
- **Product Analysis**
  - Data Quality / Repair
  - Property Analysis
  - Moldability Analysis
- **Core / Cavity**
  - Initialize Project
  - Mold CSYS & Workpiece
  - Layout
  - Parting
  - Slides / Lifters
- **Mold Structure**
  - Mold Base
  - Ejector Pins
  - Cooling
  - Gates / Runners
  - Standard Parts
- **Validation**
- **Detailing**
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

"NX Mold Design has increased our productivity 100%, allowing us to create mold designs twice as fast as before."

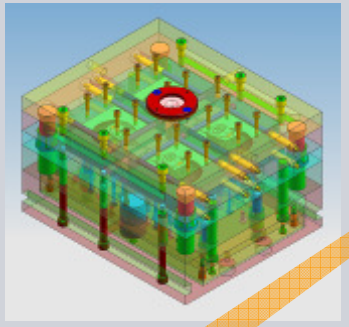
Neal Eli, President, Empire Precision Plastics (United States)

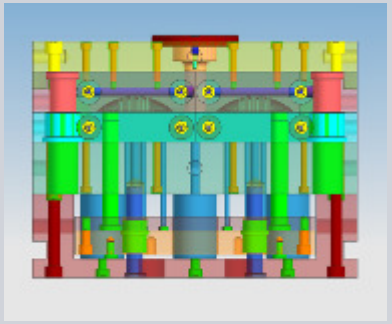
English & Metric: DME, HASCO, NATIONAL, OMNI, PROGRESSIVE, YATES, …

Enhanced in NX 6

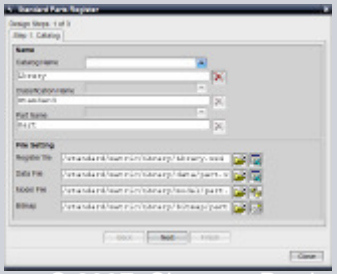


Injection, Ejection, Support Pillar, Stop Buttons, Screws, Dowels, Springs, Guides, Locks, Cone Lock, Slide, …





Custom Standard Part Creation



Registration Wizard

OPTIMIZATION TIP: Increase productivity by configuring libraries of standard parts that are commonly and frequently used.

Design Validation

SIEMENS

Engineering Process Management

Design Change Propagation and Control

- Product Analysis
  - Data Quality / Repair
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  - Mold Base
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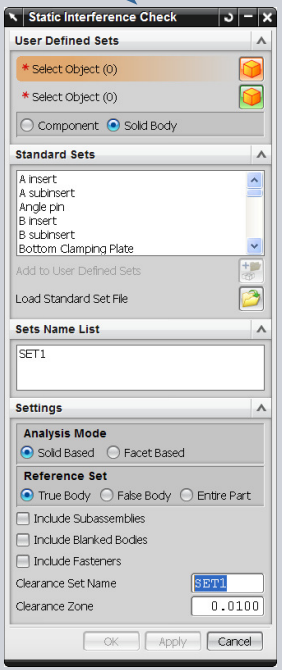
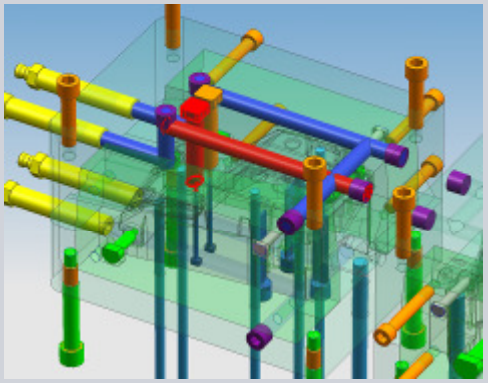
  - Standard Parts
- Validation
- Detailing
  - Pocketing
  - BOM
  - Drawings
- Manufacturing
  - Electrodes
  - CAM
  - Shop Floor

"Hofmann needs to identify interferences early in the design cycle – NX Mold Design provides effective tools for early design confirmation with parting check and tool design validation."

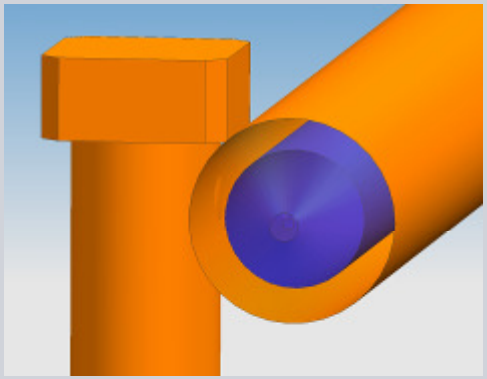
Peter Michel, Design Group Leader, Hofmann Innovation Group, AG (Germany)

Enhanced in NX 6

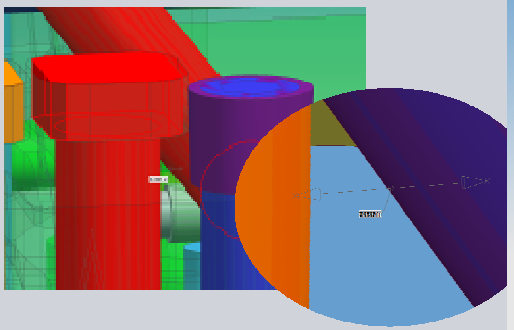




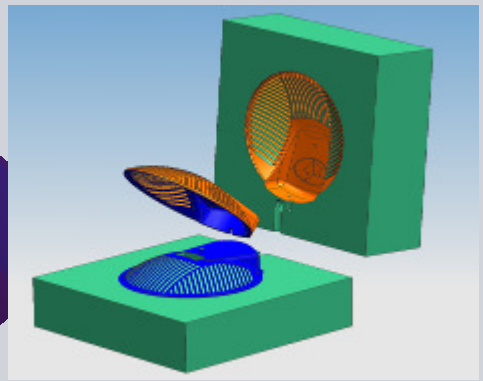
Interference Check



Clearance Zone



Measurements



Parting Check

Mold Design Detailing

Engineering Process Management

Design Change Propagation and Control

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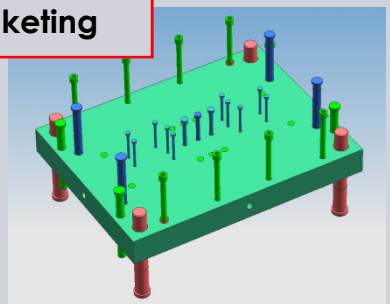
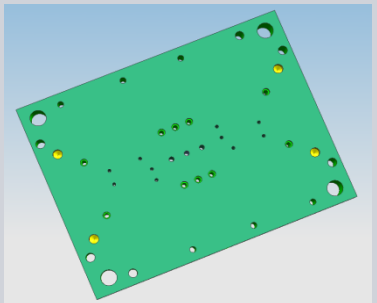
- **Detailing**
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

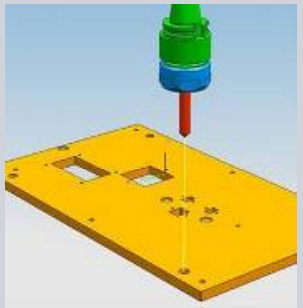
"Huge costs for unnecessary and time-consuming corrections arise through small violations of certain construction principles and rules during the design phase. NX Mold Design virtually eliminates such violations, saving significant time and money."

Dominique Burkard, Project Leader for Product Development, PCC (Switzerland)

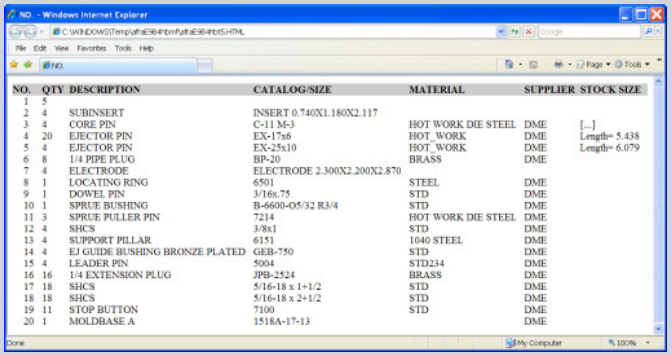
Pocketing





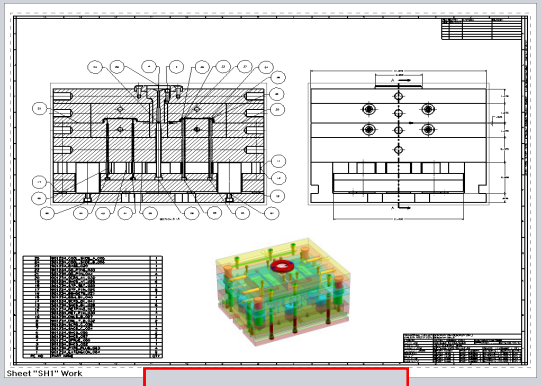


Mold Base Design → **Mold w/ Pockets** → **CAM Automation**



NO.	QTY	DESCRIPTION	CATALOG/SIZE	MATERIAL	SUPPLIER	STOCK SIZE
1	5					
2	4	SUBINSERT	INSERT 0.740X1.180X2.117			
3	4	CORE PIN	C-11 M-3	HOT WORK DIE STEEL	DME	[...]
4	20	EJECTOR PIN	EX-17x6	HOT_WORK	DME	Length= 5.438
5	4	EJECTOR PIN	EX-25x10	HOT_WORK	DME	Length= 6.079
6	8	1/4 PIPE PLUG	BP-20	BRASS	DME	
7	4	ELECTRODE	ELECTRODE 2.300X2.200X2.870			
8	1	LOCATING RING	6501	STEEL	DME	
9	1	DOWEL PIN	3/16x.75	STD	DME	
10	1	SPRUE BUSHING	B-6600-O5/32 R3/4	STD	DME	
11	3	SPRUE PULLER PIN	7214	HOT WORK DIE STEEL	DME	
12	4	SHCS	3/8x1	STD	DME	
13	4	SUPPORT PILLAR	6151	1040 STEEL	DME	
14	4	EJ GUIDE BUSHING BRONZE PLATED	GEB-750	STD	DME	
15	4	LEADER PIN	5004	STD234	DME	
16	16	1/4 EXTENSION PLUG	JPB-2524	BRASS	DME	
17	18	SHCS	5/16-18 x 1+1/2	STD	DME	
18	18	SHCS	5/16-18 x 2+1/2	STD	DME	
19	11	STOP BUTTON	7100	STD	DME	
20	1	MOLDBASE A	1518A-17-13		DME	

BOM



Drawings

Pocketing

SIEMENS

Engineering Process Management

Design Change Propagation and Control

- **Product Analysis**
  - Data Quality / Repair
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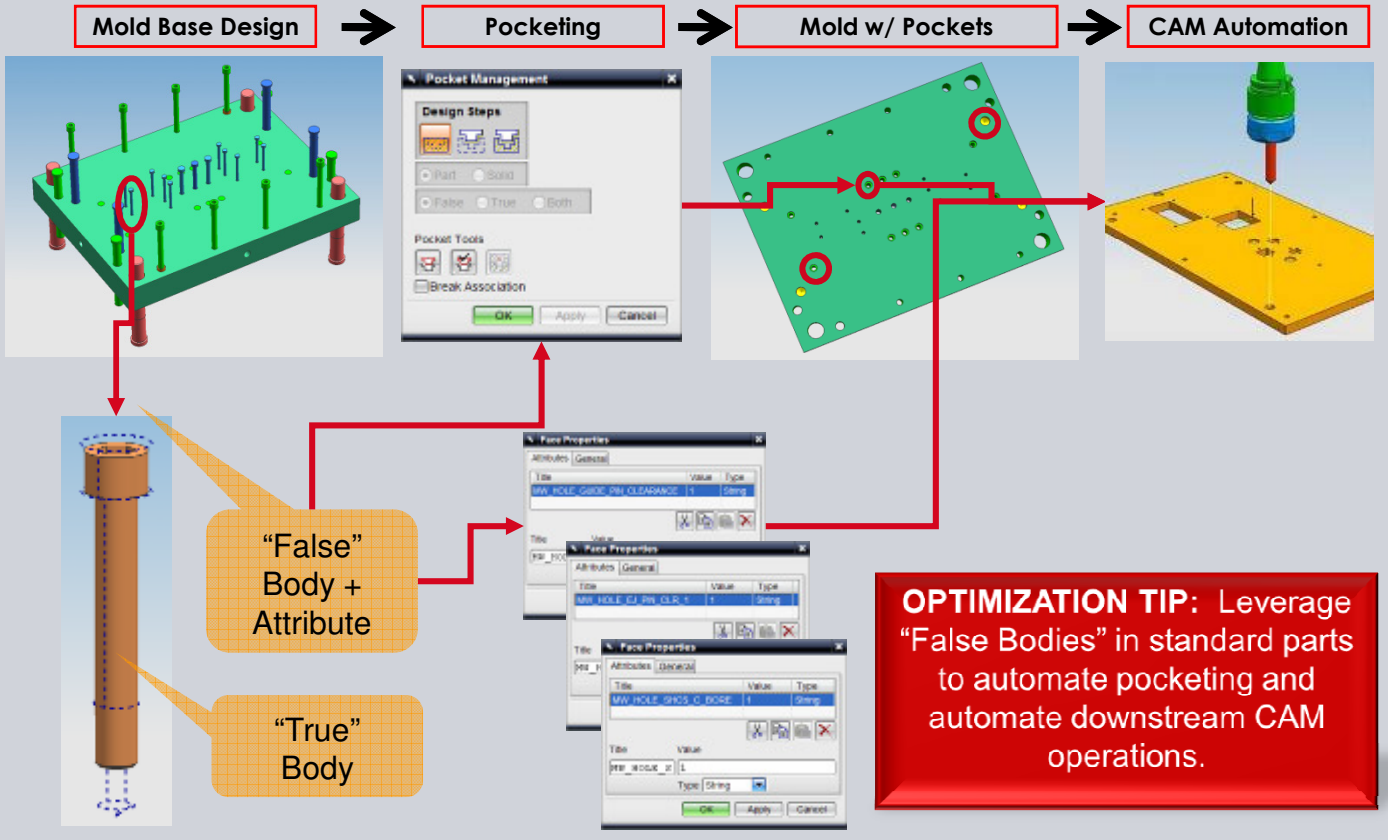
  - Mold Base
  - Ejector Pins
  - Cooling
  - Gates / Runners
  - Standard Parts
- **Validation**
- **Detailing**
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

Inserts and standard parts are designed to contain "False Bodies" for automation of pocket cutouts for die plates. A "False Body" is a solid body hole representation used to cutout the plate pocket. Multiple cutouts can be quickly performed in the same operation.



OPTIMIZATION TIP: Leverage "False Bodies" in standard parts to automate pocketing and automate downstream CAM operations.

SIEMENS

Bill Of Materials

Engineering Process Management

Design Change Propagation and Control

- **Product Analysis**
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  - Drawings
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  - Electrodes
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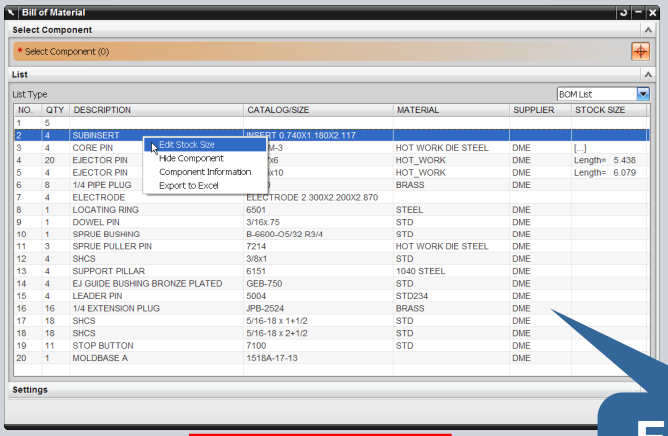
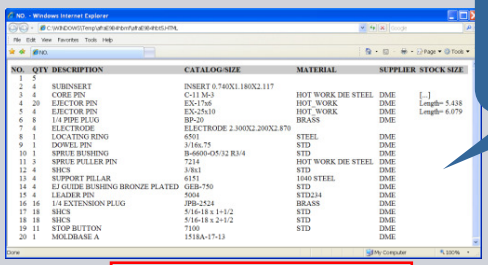
The BOM function is flexible and is used to create various formats of the BOM – export the BOM to excel, html, or drawing parts list. The BOM can be easily edited and configured to report pre-defined attributes on parts such as material, supplier, description, etc.



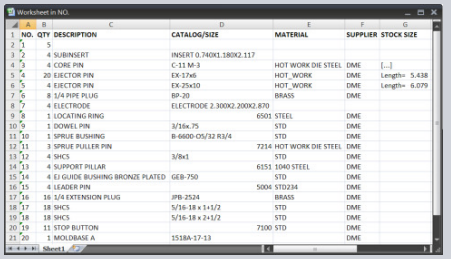
BOM

New in NX 6

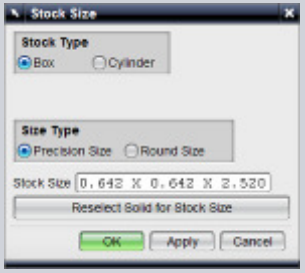


BOM Export to Browser

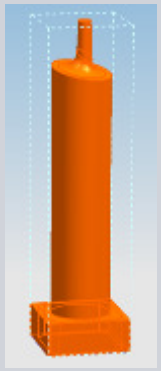
Enhanced in NX 6



BOM Export to Excel



Stock



OPTIMIZATION TIP: Use attributes on standard parts to automate documentation of the BOM and parts list. Automate stock size calculation and documentation based on attributes.

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Drawing Automation / Creation

Engineering Process Management

Design Change Propagation and Control

- **Product Analysis**
  - Data Quality / Repair
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  - Gates / Runners
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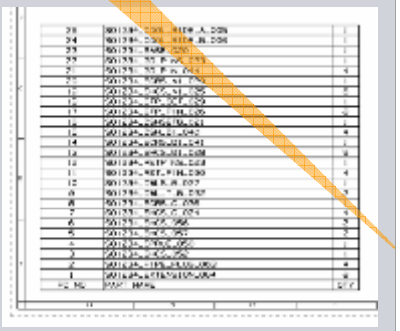
- **Validation**
- **Detailing**
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

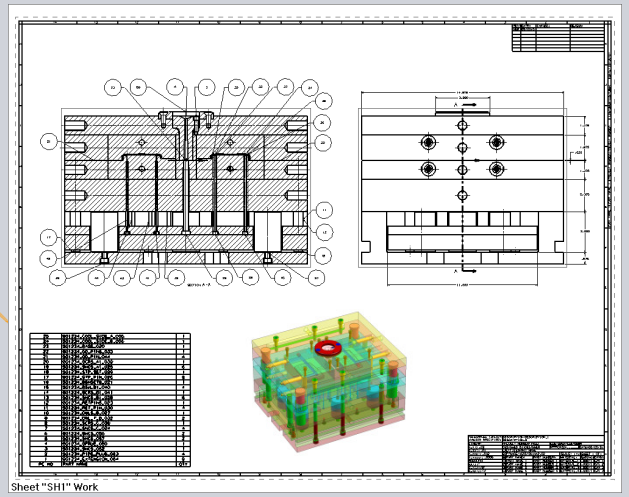
"The Hole Table function performs quickly and is useful for automating documentation processes."

Randy Moodie, NC Programmer, Minco Tool and Mold, Inc. (United States)

Enhanced in NX 6

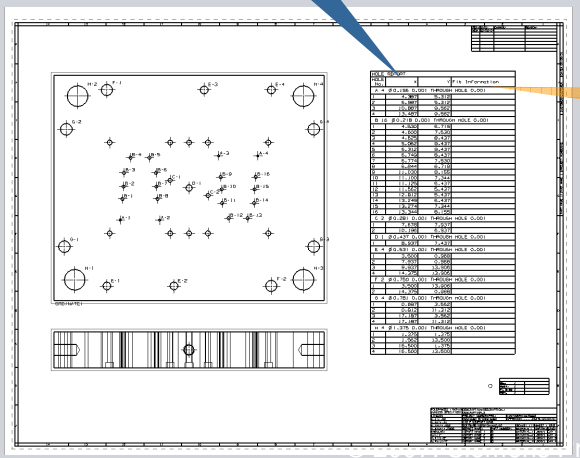
BOM



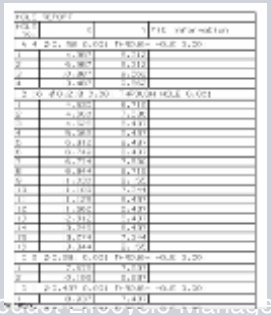


Assembly Drawing

Component Drawing



Hole Table



OPTIMIZATION TIP:
Configure and apply drawing templates to minimize time required to document designs.

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Mold Manufacturing

Engineering Process Management

Design Change Propagation and Control

- **Product Analysis**
  - Data Quality / Repair
  - Property Analysis
  - Moldability Analysis
- **Core / Cavity**
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  - Cooling
  - Gates / Runners
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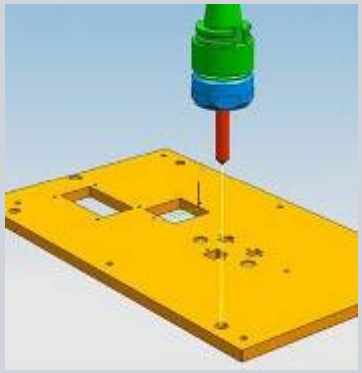
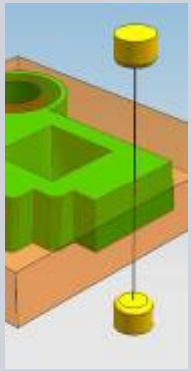
- **Detailing**
  - Pocketing
  - BOM
  - Drawings
- **Manufacturing**
  - Electrodes
  - CAM
  - Shop Floor

"When considering HSM, keep in mind that it only works well if you have a highly integrated environment of equipment, software, and support. With UGS, we found software and support of the highest quality and performance."
Josep Solé, General Manager, C.M. Solé (Spain)

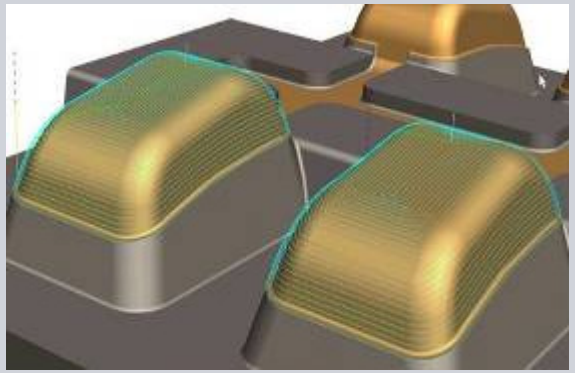
Automated Hole-making

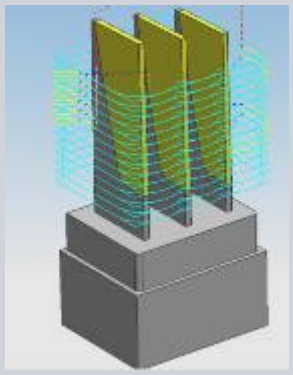


WireEDM

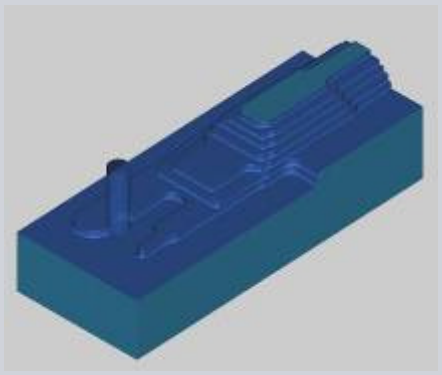


High Speed Machining

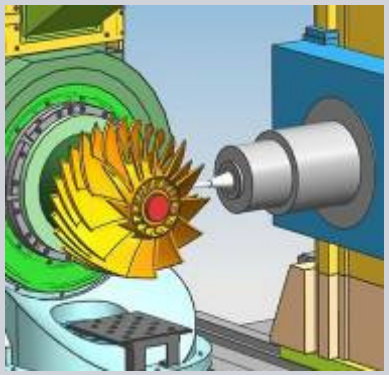




Electrode Design



Machining Simulation



Machine Tool Simulation

SIEMENS

Electrode Design & Documentation Process

Engineering Process Management

Design Change Propagation and Control

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  - BOM
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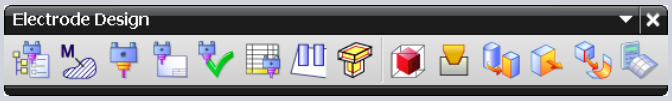
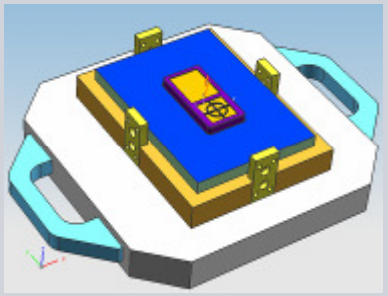
  - Electrodes
  - CAM
  - Shop Floor

"The NX Electrode Design product provides the breadth of integrated tools necessary for the electrode design process."

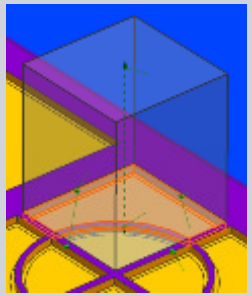
Takahiro Maruyama, Chief Tool Design and Manufacturing Engineer, Shonan Design Co., Ltd (Japan)



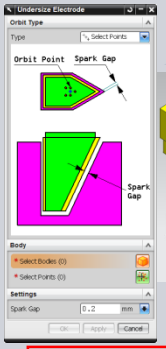
New in NX 6

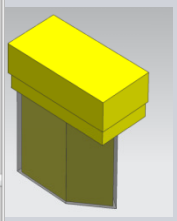


Workpiece & Pallet

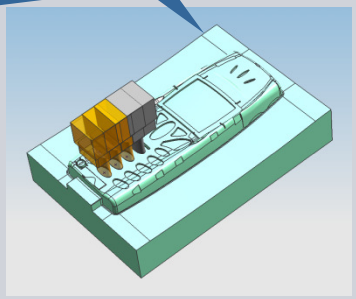


Burn Area Modeling

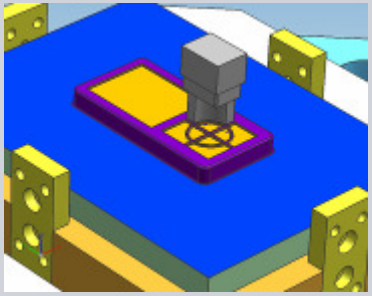


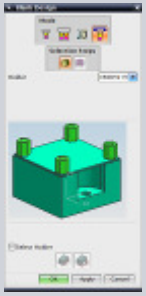


Electrode Undersizing

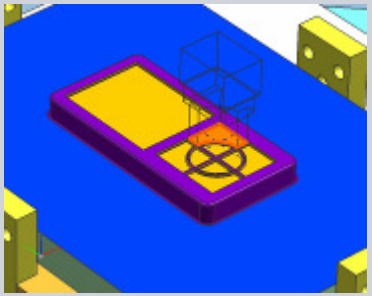


Copy / Mirror

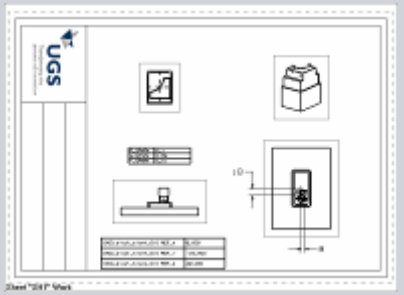




Blank & Holder



Electrode Validation



Electrode Drawing & Documentation

OPTIMIZATION TIP: Eliminate data exchange and obtain process efficiencies for manufacturing by leveraging the integration of NX Electrode Design.

SIEMENS

CAM

Engineering Process Management

Design Change Propagation and Control

- **Product Analysis**
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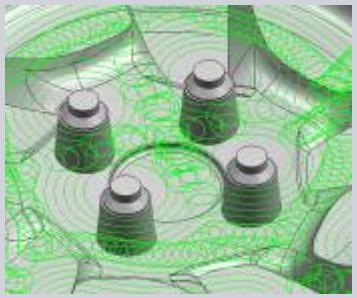
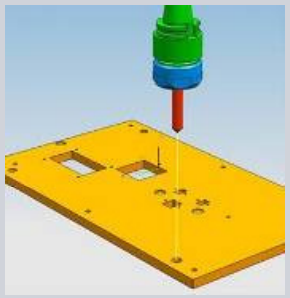
"Results show us that our decision to introduce HSM was right, and we are collecting the fruits of our investment: excellent accuracy and surface finishing with reduced manufacturing time."

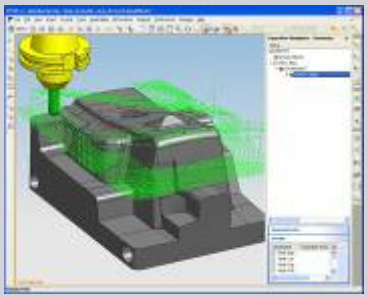
Josep Solé, General Manager, C.M. Solé (Spain)



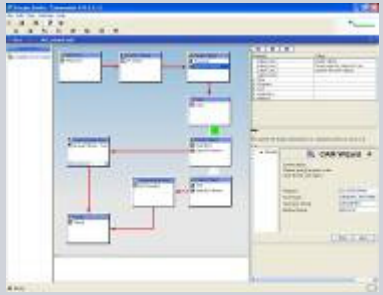
High Speed Machining

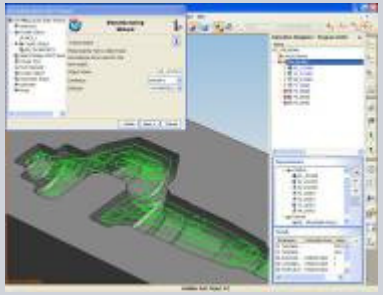


Feature-based Machining



Tool Path Verification





Wizards

Shop Docs

Siemens PLM Software

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Shop Floor

Engineering Process Management

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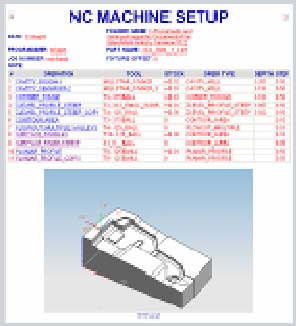
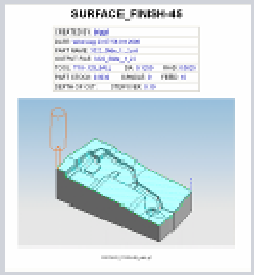
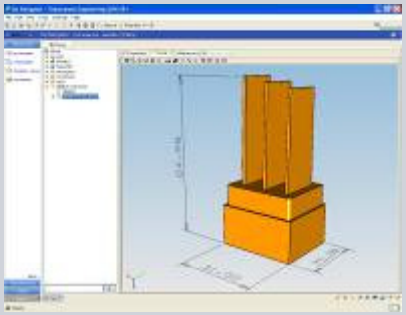
"A big benefit of NX and automation is that we are able to move through design and CAM quickly and get the job down to the shop floor as soon as possible, giving the operators everything they need to do their jobs, without requiring blueprints."
John Kuran, Systems Engineer, Dependable Pattern Works (United States)

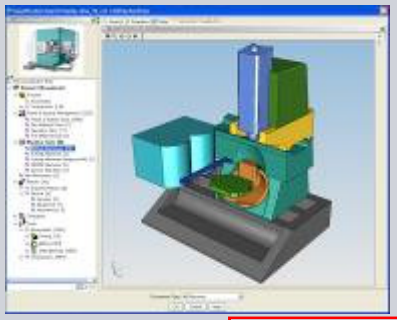


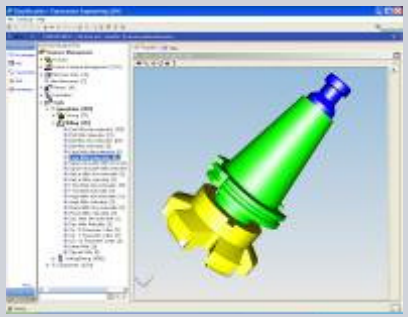


Shop Docs

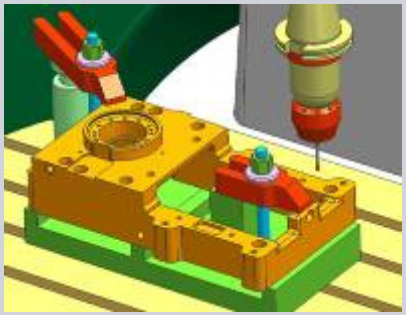


Shop Floor Visualization





Resource Management



Quality / Inspection

OPTIMIZATION TIP: Use data management and visualization capabilities to find and view parts for manufacturing and assembly.

Design Change Propagation & Control

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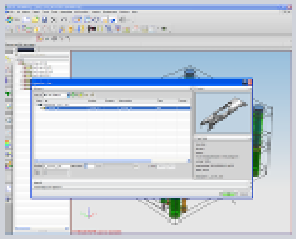
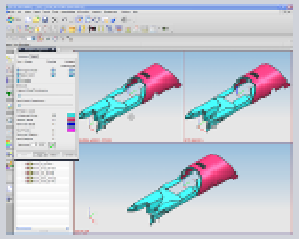
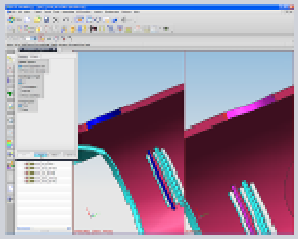
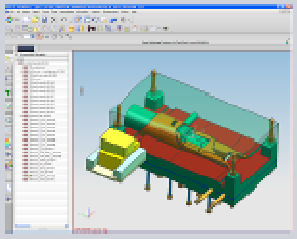
Leverage the master model concept & associativity throughout the design and manufacturing process to expedite design changes quickly.

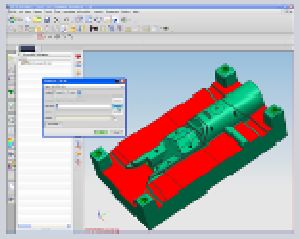


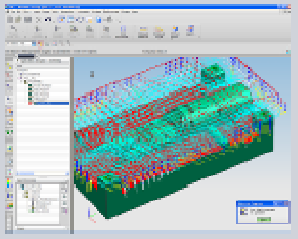
Design Change → 

Compare parts → 

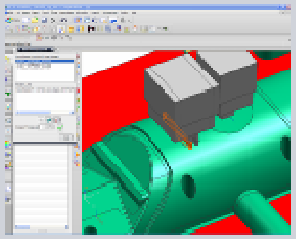
Map & Swap Parts

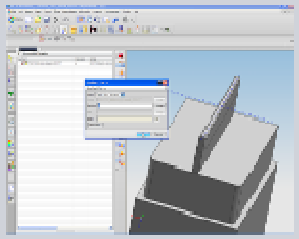


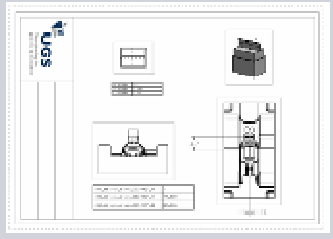
Identify Affected Components → 

Update Components → 

Update Drawings & CAM



Identify Affected Electrodes → 

Update Electrodes → 

Update Drawings & CAM

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Engineering Process Management

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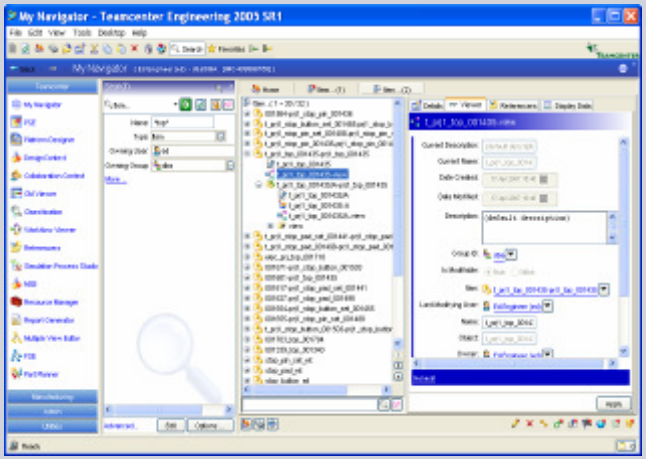
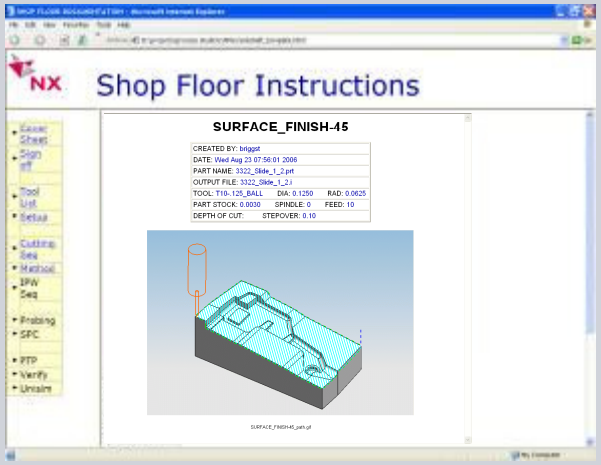
"Revision control was our biggest problem in the past. When we had the different departments working with different software, it was very hard to ensure that everyone was working with up-to-date information. With Teamcenter, we have a tight system of revision control. Between that and the single source data model approach, everyone is accessing up-to-date geometry in real time."

Vince Travaglini, Vice President, Engineering, Stackteck (Canada)



Project Data & Process Management



Manufacturing Data &Process Management

OPTIMIZATION TIP: Leverage Teamcenter to employ project data management and manage revisions, workflows, connect processes between divisions.

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Thank you.